

Claims

We claim:

5 1. Method for the scheduled execution of program steps (target function) by the processor of a computer at predetermined times, in which a register of the computer is repeatedly read and this value is compared with a reference value representing the predetermined time, wherein when the read value corresponds to the reference value, the target function is executed in the processor, characterized in that the reading of the register is performed within a start function which is
10 executed by the processor as an interrupt service routine.

 2. Method according to Claim 1, characterized in that the interrupt signal is triggered with a lead time before the predetermined time and in that the lead time is defined so that it is greater than the expected maximum delay between the appearance of the interrupt signal at the interrupt input of the processor and the execution of the start function.

15 3. Method according to Claim 1, characterized in that a count register is used as a register.

 4. Method according to claim 3, characterized in that the time stamp counter (TSC) of the central processing unit (CPU) of the computer is used as a count register.

20 5. Method according to claim 1, characterized in that the interrupt signal is triggered by a timer of the computer as a timer interrupt.

 6. Method according to claim 2, characterized in that the expected maximum delay is determined continuously during the runtime of the computer.

25 7. Method according to Claim 6, characterized in that the value for the maximum delay is determined on the basis of the actual delay which is acquired by reading the count register at the beginning of the start function and by subtracting the value representing the time of appearance of the corresponding interrupt signal.

 8. Method according to Claim 7, characterized in that the expected maximum delay is determined by multiplying the actual delay by a safety factor that is, for example, between 1.2 and 2.

30 9. Method according to Claim 6, characterized in that when the determined maximum delay exceeds an upper limit, an error report is generated.

10. Method according to Claim 6, characterized in that when the determined maximum delay exceeds the upper limit, the value for the lead time is set equal to this limit.

11. Method according to Claim 5, characterized in that a timer interrupt is used that other programs running simultaneously on the computer, in particular, the operating system, use to call an original function.

12. Method according to Claim 11, characterized in that the address of the original function is read from the interrupt table which contains the addresses of the service routines associated with the various interrupt inputs and the address of the original function is replaced by the address of the start function.

13. Method according to Claim 11, characterized in that both the scheduled target function to be executed and also the original function are executed by an interrupt request by means of the start function.

14. Method according to Claim 11, characterized in that the timer is adjustable to various clock rates by the operating system and in that before the beginning of the method it is set to the maximum clock rate.

15. Method according to Claim 14, characterized in that the clock rate of the timer is changed by the method and reset to the maximum clock rate before the end of the method.

16. Method according to Claim 11, characterized in that a list with the predetermined times for the execution of the target function and a list with the times when the interrupt signal will be triggered are created, in that the start function compares the next time of the execution of the target function with the time of the next interrupt signal and causes the execution of the original function if the next interrupt signal appears at least the maximum delay before the next time of execution of the target function.

17. Method according to Claim 1, characterized in that at the beginning of the start function, the register contents of the processor registers that are changed by the start function are pushed onto the stack of the computer and at the end of the start function, these contents are written back into the registers.

18. Method according to Claim 1, characterized in that at the beginning of the start function, the currently executed interrupt is determined by reading a register of the interrupt controller and the processing of the current interrupt request is then acknowledged by an end-of-interrupt command (EOI).

19. Method according to Claim 1, characterized in that the original function is activated by a jump command by means of the start function.

20. Method according to Claim 1, characterized in that during its runtime, the start function determines whether there is an additional interrupt signal at the interrupt input and if so,
5 sends an error report to the target function.

21. Software program product to be loaded into working memory of a computer operated by an operating system with a processor and a count register, characterized in that it includes a program step sequence for executing a method according to Claim 1.

22. Machine-readable data carrier with a software program stored on the data carrier,
10 wherein the software program implements a method for the scheduled execution of program steps (target function) at predetermined times, in which a register of the computer is repeatedly read and this value is compared with a reference value representing the predetermined time,
wherein when the read value corresponds to the reference value, the target function is executed,
characterized in that the reading of the register is performed within a start function which is
15 executed by the processor as an interrupt service routine.